

Technology Deployment Initiatives and Partnership Program

Request for Funding

FY 2002

FHWA Strategic Goal Area: Safety and Productivity

Project Title: Bighorn Canyon NRA slope stability monitoring using TDR

Problem Statement: To reduce costs and gather more data while monitoring remote sites for slope stability. A number of problems exist with remote data acquisition, among them are high cost to visit each site to retrieve data, limited number of trips equals limited amount of data. For Inclinator installations in traveled roadways, traffic control costs are high. TDR is cheaper to install than in-place-inclinometers. TDR cable can be routed under the road to the edge, eliminating the need for traffic control. TDR can be installed in smaller diameter boreholes reducing drilling costs. TDR can be installed in inclinometer casings that are too bent to get readings from using a probe, thus extending their useful life. We hope to re-habilitate approximately 20 inclinometer installations if this system provides us with the information we need. Adding a data logger and communications setup we can get data on demand, reprogram the data logger, record data each minute, hour, day, etc. Using a solar panel for power we would not have to visit a site for years. When our study is complete all except the TDR cable is re-usable.

Proposal: To install TDR cable inside an existing inclinometer casing, connect the TDR to a cable tester, data logger, and communications system (radio to cellular phone) Power the system using a battery and solar panel. Data will be transmitted to WFLHD office in Vancouver.

Benefits: Reduced data acquisition costs, increase useful life of inclinometer casings, gather more data (to better determine cause).

Resources/Cost: \$18,000 for hardware, software, and assistance from an instrumentation contractor.

Duration: One year for costs. On going for data retrieval.

Organization/Method: Purchase equipment and install using in house staff with assistance from contractor. Report installation and data collection results periodically over two years for decision on making this a standard practice.

Submitter:

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